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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/895,025

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Toshiaki Shinohara

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07/08/2004

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EXAMINER

VU, QUANG D


ART UNIT

PAPER NUMBER

2811

DATE MAILED: 07/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/895,025	Applicant(s) SHINOHARA, TOSHIAKI	
	Examiner Quang D Vu	Art Unit 2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 April 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6-10 is/are allowed.
- 6) ☒ Claim(s) 1-5 and 11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 3, 4, 5 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 5,291,065 to Arai et al.

Regarding claim 1, Arai et al. (figure 10) teach a semiconductor device comprising:

a semiconductor element (5);

a metal block (330) having a first surface and a second surface opposite to the first surface;

an aluminum wire (5g) having an electrode terminal joined to the first surface of the metal block (330); and

a ceramic substrate (301) having metal layers (312, 340) formed on both surfaces, one of the metal layers (312) joined directly by a first jointing material (material layer [320]) to the second surface of the metal block (330).

It is inherent that the semiconductor element (5) having an electrode for the I/O connection.

It is inherent that the semiconductor element (5) and the electrode are joined to the first surface of the metal block (330) through a second jointing material (a material layer is under the

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semiconductor element [5]) for the interconnection between the semiconductor element and the external device.

Regarding claim 3, Arai et al. teach the semiconductor element includes a plurality of semiconductor elements (5);

the metal block (330) and the ceramic substrate (301) are separated per insulation unit of at least one of the plurality of semiconductor elements (5);

the metal block (330) is provided to be in correspondence with at least one of the plurality of semiconductor elements (5); and

the ceramic substrate (301) extends over all of the plurality of semiconductor elements (5) for forming the insulation unit.

Regarding claim 4, Arai et al. inherently teach the metal block (330) includes a surface having a region larger than that of the second jointing material, which is in contact with the metal block.

Regarding claim 5, Arai et al. teach a gap between the metal block (330) and the semiconductor element (5) becomes wider as a distance from a center of the semiconductor element (5) becomes longer; and the gap is filled with the second jointing material (a material layer is under the semiconductor element [5]).

Regarding claim 11, Arai et al. teach the semiconductor element includes a plurality of semiconductor elements (5);

the metal block (330) and the ceramic substrate (301) are separated per insulation unit of at least one of the plurality of semiconductor elements (5);

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the ceramic substrate (301) is provided to be in correspondence with at least one of the plurality of semiconductor elements (5); and

the metal block (303) extends over all of the plurality of semiconductor elements (5) for forming the insulation unit.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,291,065 to Arai et al.

Regarding claim 2, Arai et al. differ from the claimed invention by not showing the metal layers formed on the both surfaces of the ceramic substrate are the same with each other in thickness. It would have been obvious to one having ordinary skill in the art at the time the invention was made for the metal layers formed on the both surfaces of the ceramic substrate are the same with each other in thickness because it depends on the amount of heat that dissipated by the integrated circuit.

Allowable Subject Matter

5. Claims 6-10 are allowed.

Response to Arguments

Applicant's arguments filed 04/20/04 have been fully considered but they are not persuasive.

It is argued, in page 7 of the remarks, that Arai et al. do not teach or suggest a ceramic substrate having metal layers formed on both surfaces, one of the metal layers joined directly by a first jointing material to the second surface of the metal block. This argument is not convincing because Arai et al. (figure 10) teach a ceramic substrate (301) having metal layers (312, 340) formed on both surfaces, one of the metal layers (312) joined directly by a first jointing material (material layer [320]) to the second surface of the metal block (330). Applicant does not show what is the material of the jointing material. Therefore, the material layer (320) can be read on the jointing material.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quang D Vu whose telephone number is 571-272-1667. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on 571-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

qv
June 30, 2004

Quang D. Vu
Donghee Kang
Primary Examiner
A-U. 2811